

CLAIM AMENDMENTS

1. (Amended) A bottom valve apparatus of a hydraulic shock absorber comprising:
a bolt and nut provided with a guide element centering the coil spring and the check valve plate by the nut or the bolt;
a bottom piece;
a flow passage formed in the bottom piece;
a check valve opening and closing the flow passage and being disposed in one face side of the bottom piece, the check valve being movable in response to fluid pressure;
a coil spring urging the check valve;
the coil spring and the check valve being exposed to hydraulic fluid during normal operation,
the check valve being a relatively thin plate, which is movable during normal operation, having a sealing side and a coil spring side, the check valve being disposed between the coil spring and the bottom piece, the check valve having an area which would undesirably allow a leading end of the coil spring to move from the coil spring side to the sealing side upon rotation of the coil spring in a direction where the leading end of the coil spring is leading the rest of the spring during assembly;
the coil spring being fastened by a bolt and a nut which are being disposed in the bottom piece;
an leading end portion of the coil spring being directly abutted attached to a coil spring side valve plate surface of the check valve, the coil spring imposing a force against the coil spring side surface tending to controllably oppose movement of the check valve away from a closed position;
a thread direction of the nut or the bolt fastening the coil spring is being set to an opposite direction to a winding direction of the coil spring;
wherein, due to the opposite winding directions of the nut or bolt with respect to the spring, any movement imparted to the coil spring by the tightening action of the nut or bolt during assembly would be such that the leading end of the coil spring would trail the rest of the spring, thereby preventing the leading end of the coil spring from moving from the spring side to the sealing side of the check valve, thereby to prevent disrupting the sealing function of the sealing side of the check valve.

2. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 1, wherein the nut of the bolt has a centering guide for the check valve and the coil spring.
3. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 1, wherein the bolt is insertable from a lower face side of the bottom piece, the check valve and the coil spring are disposed in the vicinity of a protruding end of the bolt protruding to an upper face side of the bottom piece, the nut is screwed with the protruding end of the bolt, and the coil spring is centered and fastened by the nut.
4. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 2, wherein the bolt is insertable from a lower face side of the bottom piece, the check valve and the coil spring are disposed in the vicinity of a protruding end of the bolt protruding to an upper face side of the bottom piece, the nut is screwed with the protruding end of the bolt, and the coil spring is centered and fastened by the nut.
5. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 1, wherein the check valve and the coil spring are disposed in an upper face side of the bottom piece, the bolt passing through the check valve and the coil spring is insertable from an upper face side of the bottom piece, the nut is screwed with a protruding end of the bolt protruding to a lower face side of the bottom piece, and the coil spring is centered and fastened by the bolt.
6. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 2, wherein the check valve and the coil spring are disposed in an upper face side of the bottom piece, the bolt passing through the check valve and the coil spring is insertable from an upper face side of the bottom piece, the nut is screwed with a protruding end of the bolt protruding to a lower face side of the bottom piece, and the coil spring is centered and fastened by the bolt.
7. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 1, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

8. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 2, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

9. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 3, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

10. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 4, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

11. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 5, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

12. (Previously Presented) The bottom valve apparatus of a hydraulic shock absorber according to claim 6, wherein the coil spring is substantially a spiral shape of increasing diameter, and an outer peripheral end portion of the coil spring is contactable with a surface of the check valve.

13. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 1, wherein the coil spring is substantially a complete cylindrical shape.

14. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 2, wherein the coil spring is substantially a complete cylindrical shape.

15. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 3, wherein the coil spring is substantially a complete cylindrical shape.

16. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 4, wherein the coil spring is substantially a complete cylindrical shape.

17. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 5, wherein the coil spring is substantially a complete cylindrical shape.

18. (Original) The bottom valve apparatus of a hydraulic shock absorber according to claim 6, wherein the coil spring is substantially a complete cylindrical shape.